4. Cancelled

5. Cancelled

6. Cancelled

7. An airfoil for directing an airflow shield to prevent bugs and other lightweight debris from hitting the windshield of a moving vehicle comprising:

a base foil having a forward protruding lip for collecting incoming airflow and an upright curvature substantially following the angle of protrusion of the windshield from the vehicle; and

an upper foil connected to and spaced-apart from the base foil at a position elevated from and substantially parallel to the base foil;

characterized in that the space between the base foil and the upper foil functions to redirect airflow in a path substantially parallel to the windshield, forming a bug shield of moving air.

8. The airfoil of claim 7 wherein the upper foil is held rigidly above the base foil by a plurality of support fins, the fins aiding in channeling the airflow.

9. The airfoil of claim 7 wherein the airfoil is formed of one polymer piece in a molding operation.

10. The airfoil of claim 7 wherein the airfoil is formed of 2 or more polymer pieces and is assembled.

11. The airfoil of claim 7 wherein the airfoil is formed of aluminum.

12. The airfoil of claim 7 wherein the airfoil is adjustable in one or both of

direction and/or spacing.

13. The airfoil of claim 7 wherein the base foil has at least two windshield support feet adapted as standoffs to the windshield.

14. A method for preventing bugs and other lightweight debris from hitting the windshield of a vehicle comprising steps of:

(a) collecting an incoming airflow in an airfoil having at least an upper foil and a base foil while the vehicle is in motion; and

(b) redirecting the captured airflow through the airfoil in an upward direction substantially parallel to the windshield.

15. The method of claim 14 wherein in step (a) the incoming airflow is channeled, prior to the airfoil, through an array of vortex generators.

16. The method of claim 14 wherein in step (a) the airfoil is a contiguous piece formed in a molding operation.

17. The method of claim 14 wherein in step (a) the airfoil is formed of 2 or more pieces that are assembled together.

18. The method of claim 14 wherein in step (a) the airfoil is adjustable in one or both of spacing and direction.

19. The method of claim 15 wherein in step (a) the foils comprising the airfoil are held apart by a plurality of support fins, the fins aiding in channeling the air flow created by the vortex array.

20. The method of claim 14 wherein in step (b) redirection is accomplished through curvatures formed in the airfoil.

21. A system for reducing drag on a land-operating vehicle, and therefore increasing fuel efficiency, comprising an array of vortex generators, each presenting a substantially vertical foil to an airstream created by driving the vehicle through ambient air, the array affixed to a surface of the vehicle and extending substantially in a line at a right angle to the direction of vehicle travel, the system reducing turbulence and enhancing laminar flow.

22. The system of claim 21 wherein the line of generators is imposed along a forward position on a hood of the vehicle.

23. The system of claim 21 wherein the line of generators is imposed along a forward position on a cab top of the vehicle.

24. The system of claim 21 using two lines of generators, a first line of generators imposed along a forward position on a cab top of the vehicle, and a second line of generators along a forward position of a hood of the vehicle

25. The system of claim 21 wherein individual generators are aligned to spread the laminar flow created to a width greater than the width of the line of generators.

If there are any fees due beyond any fees paid, authorization is given to deduct such fees from deposit account 50-0534.

Respectfully Submitted,
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